U. S. DEPARTMENT OF AGRICULTURE

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BIRD HOUSES AND HOW TO BUILD THEM

ONE result of the increasingly popular interest in birds has been a definite movement to protect them and to concentrate them where they are especially desired. It is during the breeding period that birds are at their best, and people who love to see and hear them or who need their help in fighting insect pests are eager to offer inducements in the way of nesting sites to invite their presence at this season.

The transformation of a primeval wilderness into cultivated land has modified the distribution of birds to a marked degree. Species originally peculiar to treeless regions follow the ax and become common where previously unknown. At the same time, water birds disappear from the sites of ancestral marshes when they are drained and turned into cornfields.

Perhaps no group of birds has suffered greater disturbance by this process than those nesting in hollow trees. Forests have decreased to a small part of their former extent, and decaying trees suitable for occupancy by such birds are usually the first to be cut. From an economic point of view, hole-nesting birds rank exceptionally high, and there are strong grounds for the evident desire to keep them in the vicinity of homesteads. To accomplish this the practice arose of erecting houses for the use of the more familiar species. Gradually, as the nesting requirements of other birds have become better understood, the number of species occupying bird houses has increased.

This bulletin contains instructions for making houses suitable for the different kinds of birds known to use them or likely to do so. It is designed to encourage the protection and study of birds in all sections of the United States.

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BIRD HOUSES AND HOW TO BUILD THEM.

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CONTENTS.

NEIGHBORLY ACTS.

BIRDS may be gathered about us in all seasons of the year with ease and certainty merely by offering what they desire. In winter they are often pushed for food, and if we supply this need they will report daily at the lunch counter and help to relieve the tedium of our indoor life. In summer they care less for food provided by their human friends, and other means must be sought to attract them about the home. They appreciate fresh water for bathing and drinking. A shallow pool of varying depth, if only a foot across, becomes on hot days a center of attraction for all the birds in the vicinity, and it may be made with little effort and material; only a small quantity of cement is required, or, if that be lacking, a pan with stones in it set in the ground will be equally serviceable. Trees, shrubs, and vines bearing fruit relished by birds are great attractions in their season.

Birds are desirable about premises not only on account of their beauty and song, but because of their economic worth. They are especially useful as insect destroyers during the breeding period, when they have to work early and late to obtain sufficient food for their nestlings, and their movements at this time are more interesting than during any other season. There is, therefore, a double purpose in offering them special nesting facilities. If mud is available, swallows, robins, and phœbes will found and wall their nests with it. If feathers, bits of wool, or twine are put out, a dozen different kinds of birds will make use of them. If safe retreats are furnished in which birds can rear their young comfortably, most of them will be occupied. In fact no attraction for summer birds is more effectual

than a series of houses suited to the needs and habits of the various kinds of house birds.

A few years ago only four species were commonly regarded as house birds—the house wren, the bluebird, the tree swallow, and the martin. Since the movement to protect birds and make neighbors of them began, however, their natures and needs have become better understood, and it is now known that many other species will avail themselves of houses constructed for them by their human friends. The practice of erecting bird houses in this country, while now nation-wide, is not so common and uniformly distributed as it should be, and more extended provisions of this nature can not fail to result in a largely increased number of house birds.

HOUSE BIRDS INCREASING IN NUMBER.

The habit of nesting in bird houses has been adopted by individuals of many species which would not ordinarily be expected to make use of such homes, and this may be taken as indicating that it will become more general from year to year as facilities are afforded and as the number of birds hatched in houses increases.

That western wrens and bluebirds should take as naturally to artificial shelters as did their eastern relatives was to be expected. On the other hand, the use of houses by birds which until recently had persistently ignored them is surprising and must be considered a victory for those who have studiously attempted to enlarge their circle of feathered neighbors.

Woodpeckers, nuthatches, and titmice excavate their own houses, usually new ones each year, leaving the old homes to less capable architects. Builders of artificial houses generally go to the woodpecker for designs, and by varying styles to suit the tastes of different kinds of birds, have been rewarded by such tenants as chickadees, tufted titmice, white-breasted nuthatches, Bewick and Carolina wrens, violet-green swallows, crested flycatchers, screech owls, sparrow hawks, and even some of the woodpeckers, the master builders themselves. Flickers readily accept houses built according to their standards. Red-headed and golden-fronted woodpeckers are willing occupants of artificial houses, and even the downy woodpecker, that sturdy little carpenter, has, in one instance at least,[1] deemed such a home a satisfactory abode in which to raise a family. Shelters having one or more sides open are used by birds which would never venture into dark houses suited to woodpeckers. They have been occupied by robins and brown thrashers, and, in one instance, by a song sparrow.[2]

[1] Reported by the late Jefferson Butler as occurring on the Ford farm, near Detroit, where great pains have been taken to provide for birds.

[2] This song sparrow record is another surprise from the Ford farm, announced by Mr. Butler, which is very encouraging to those experimenting with bird houses.

The number of house birds may be still further augmented as time goes on. All of the commoner woodpeckers are likely to be included, as are several of the small owls and wrens, and a few of the wild ducks, as the golden-eye. The wood duck is already known to use nesting boxes. Houses set close to streams in the western mountains will probably be occupied by ousels or dippers. Florida grackles sometimes breed in flicker holes and may be expected to occupy houses now and then. In every locality having trees there is a group of birds ready to appropriate houses when they have the opportunity.

SUGGESTIONS FOR CONSTRUCTING HOUSES.

House birds differ decidedly in their requirements. For those which usually excavate homes for themselves, the diameter of the entrance and the depth and diameter of the cavity must be in accord with their specific standards. Some birds are satisfied with almost any sort of a lodging. Bluebirds and wrens, for example, are content to build in tomato cans, although chickadees and nuthatches disdain them. Wood is a better building material than metal or earthenware. Entrance holes should be countersunk from the outside to exclude rain. Heads of nails and screws should be set rather deeply and covered with putty. All houses should be easy to open for cleaning. A perch at the entrance is unnecessary and may even be an objection, as it is frequently used by English sparrows while they twitter exasperatingly to more desirable occupants. To provide for proper ventilation a row of small holes is sometimes bored just beneath the eaves, but there should never be a ventilating hole lower than the entrance, and joints should be made tight, as drafts of air are dangerous. In case there is danger that rain may be driven in through the door, a small drainage hole, which will be covered by the nest, may be made in the middle of the floor.

The appearance and durability of houses are improved by a coat of paint. A neutral shade of green or gray is suitable for houses mounted in trees, while those on poles, being conspicuously placed, lend themselves harmoniously to the landscape when painted white.

The dimensions of nesting boxes shown in Table 1 are taken from the experience of successful builders and from measurements of woodpecker holes.

TABLE 1.—*Dimensions of nesting boxes for various species of birds.*

Species.	Floor of cavity.	Depth of cavity.	Entrance above floor.	Diameter of entrance.	Height above ground.
	Inches.	*Inches.*	*Inches.*	*Inches.*	*Feet.*
Bluebird	5 by 5	8	6	1½	5 to 10
Robin	6 by 8	8	(1)	(1)	6 to 15
Chickadee	4 by 4	8 to 10	6 to 8	1⅛	6 to 15
Tufted titmouse	4 by 4	8 to 10	6 to 8	1¼	6 to 15
White-breasted nuthatch	4 by 4	8 to 10	6 to 8	1¼	12 to 20
House wren	4 by 4	6 to 8	1 to 6	⅞	6 to 10
Bewick wren	4 by 4	6 to 8	1 to 6	1	6 to 10
Carolina wren	4 by 4	6 to 8	1 to 6	1⅛	6 to 10
Dipper	6 by 6	6	1	3	1 to 3
Violet-green swallow	5 by 5	6	1 to 5	1½	10 to 15
Tree swallow	5 by 5	6	1 to 5	1½	10 to 15
Barn swallow	6 by 6	6	(1)	(1)	8 to 12
Martin	6 by 6	6	1	2½	15 to 20
Song sparrow	6 by 6	6	(2)	(2)	1 to 3
House finch	6 by 6	6	4	2	8 to 12
Starling	6 by 6	16 to 18	14 to 16	2	10 to 25
Phœbe	6 by 6	6	(1)	(1)	8 to 12
Crested flycatcher	6 by 6	8 to 10	6 to 8	2	8 to 20
Flicker	7 by 7	16 to 18	14 to 16	2½	6 to 20
Red-headed woodpecker	6 by 6	12 to 15	9 to 12	2	12 to 20
Golden-fronted woodpecker	6 by 6	12 to 15	9 to 12	2	12 to 20
Hairy woodpecker	6 by 6	12 to 15	9 to 12	1½	12 to 20
Downy woodpecker	4 by 4	8 to 10	6 to 8	1¼	6 to 20
Screech owl	8 by 8	12 to 15	9 to 12	3	10 to 30
Sparrow hawk	8 by 8	12 to 15	9 to 12	3	10 to 30
Saw-whet owl	6 by 6	10 to 12	8 to 10	2½	12 to 20
Barn owl	10 by 18	15 to 18	4	6	12 to 18
Wood duck	10 by 18	10 to 15	3	6	4 to 20

[1] One or more sides open. [2] All sides open.

HOUSE PLANS.

Possibilities in the way of improvising bird houses with very little work are suggested in figures 1 and 2. Ordinary tomato cans treated in either of the ways here indicated will be tenanted by wrens and bluebirds. The cans ought always to be placed in shaded places, as the metal becomes very hot in the sun.

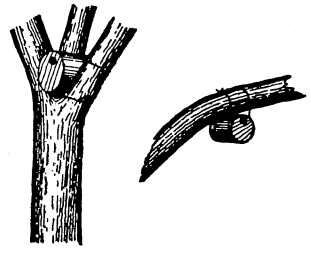


FIG. 1.—Tomato can with circular piece of board fitted in one end, to make house for bluebirds or wrens.

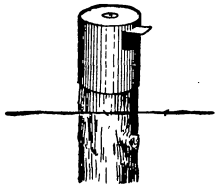


FIG. 2.—Tomato can, with one end removed, fastened to top of post. Hole cut in side for entrance. Suitable for bluebirds or wrens if put in shady place.

Bird houses in the Southern States have long been made from gourds. The entrance is in the side and a drain hole in the bottom, as shown in figure 3. A piece of wire through the neck for mounting it completes the house. A number of gourds thus prepared and strung on a pole seems to make a satisfactory tenement house for a colony of martins. Used singly they are equally well adapted to wrens and bluebirds. While gourds are not durable when exposed to the weather they are easily replaced.

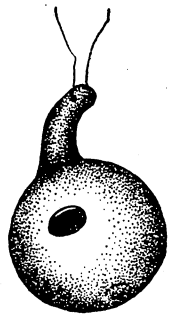


FIG. 3.—Gourd for martins.

Ordinary wooden boxes, if clean, can be made into bird houses by merely nailing on a cover and cutting out an entrance hole. Such makeshifts are rarely weatherproof and are never pleasing to the eye.

Branches containing real woodpecker holes, when obtainable, are perhaps the best attraction that can be offered most house birds in the breeding season. By carefully fitting such a branch to a fruit or shade tree its foreign origin will scarcely be noticed. The house shown in figure 6 is suitable for use in trees. It is made from a log or large branch, hollowed by decay, and fitted with a top and bottom as illustrated in the figure. The cover is to go on after the log is fastened in place. Either the top or bottom should be removable. Methods of doing this are shown in figures 23 and 26. Another way of making a log house is to split a straight-grained log 2 feet or more in length through the middle and then to cut out a cavity with a gouge. The excavations in the two halves can be made to match exactly by means of a pattern or template having the size and shape desired for the proposed cavity through the plane of cleavage. Figure 7 shows the appearance of such a house and how to place the template symmetrically on each half of the stick. The top of this house should be covered with tin or zinc to keep out moisture. The halves should be fastened together with screws to allow the house to be taken apart and cleaned.

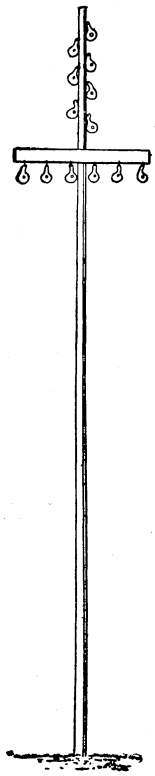


FIG. 4.—Gourds arranged for martins.

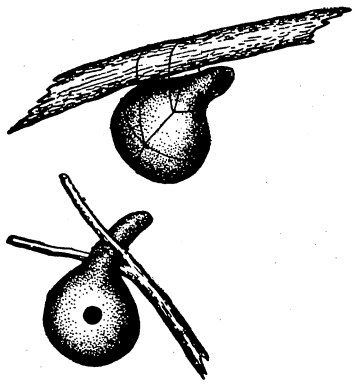


FIG. 5.—Gourds for wrens or bluebirds.

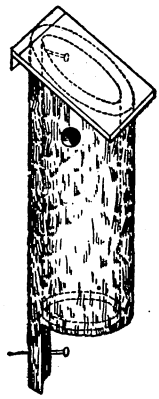
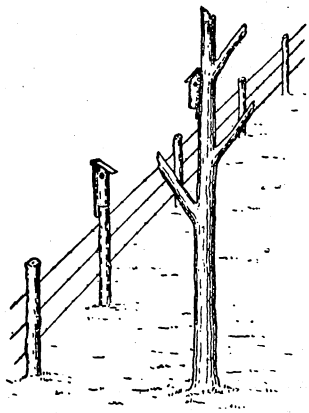


FIG. 6.—House made from hollow log.



Phœbes like to nest about buildings, and a simple shelf under the roof of a porch or shed is all they require. If, however, it is desirable to have them stay outside, the shelf must be provided with a roof. Figure 8 shows a shelf shielded from the weather by one wall and a roof. This shelf if placed high under the eaves of a two-story building may attract barn swallows; phœbes and robins also are likely to build upon it if it is not less than 8 feet from the ground. In some cases it will be advisable to leave only one side open.

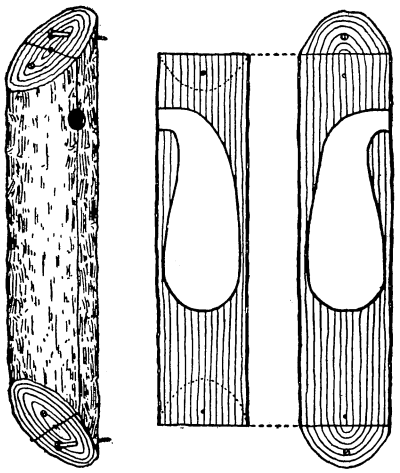
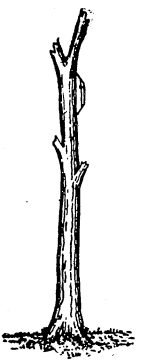


FIG. 7.—Log split and halves marked to be gouged out to form a cavity. Halves to be screwed together. Top should be covered with tin or zinc.



A nest shelter designed to be placed in shrubbery for catbirds, brown thrashers and song sparrows is shown in figure 10. As it requires little lumber or labor, one may well be placed in every patch of weeds or brush frequented by these birds. Fastened to a large horizontal branch or in a crotch of a tree it is likely to be used by robins.

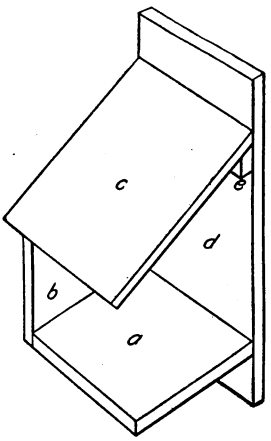
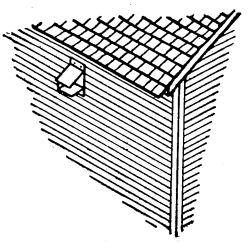


FIG. 8.—Outdoor nest shelf.



The house shown in figures 12 to 15 is designed to be set on a pole or a tree stub for the use of swallows especially. It can be cleaned by simply lifting the box from its base. Bluebirds and wrens, as well as swallows, nest in this style of house though they prefer a deeper cavity. Another pole house is shown in figure 17. This is essentially after the woodpecker model and is suitable for bluebirds. By releasing the hooks which fasten the box to the base, cleaning is easy. Figure 19 illustrates a house to be attached to a tree. It can be

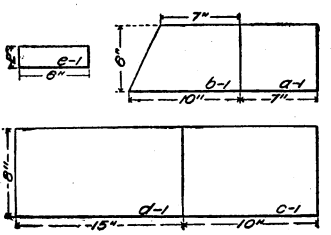


FIG. 9.—Diagrams for outdoor nest shelf shown in figure 8.

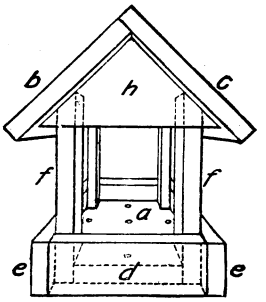
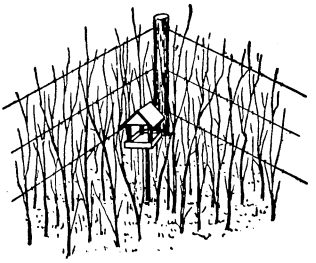


FIG. 10.—Nest shelter.



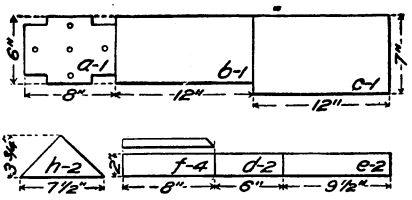


FIG. 11.—Lumber diagrams for nest shelter shown in figure 10. Thickness of boards ¾ inch.

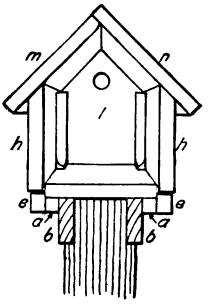
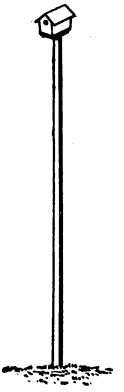


FIG. 12.—Cross section and interior view of front half of house for swallows and bluebirds.



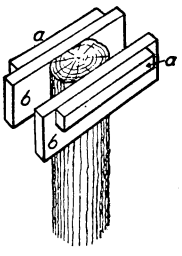


FIG. 13.—Foundation for house shown in figure 12.

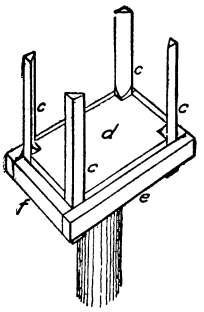


FIG. 14.—Floor and posts added to foundation shown in figure 13.

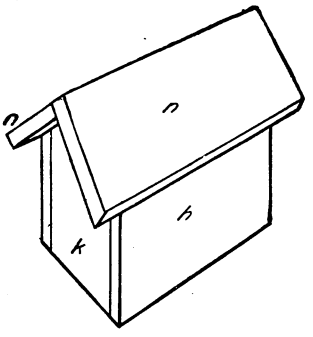


FIG. 15.—House ready to place over floor and posts as shown in figure 14.

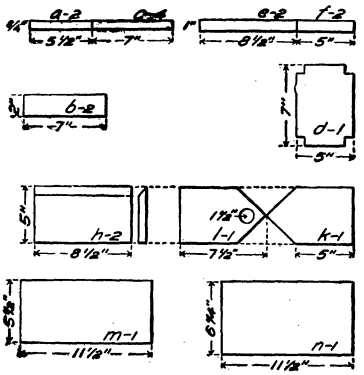


FIG. 16.—Lumber diagrams for building house shown in figures 12 to 15. Thickness of boards ¾ inch.

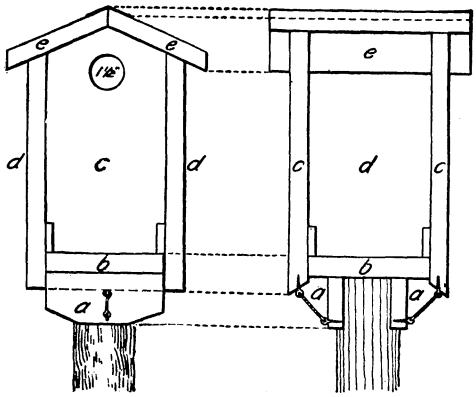


FIG. 17.—Diagrammatic drawings of bluebird house. This house can be removed from its floor by unfastening two wire hooks.

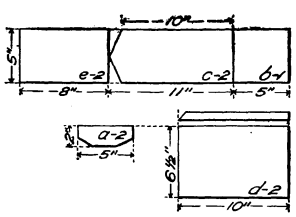
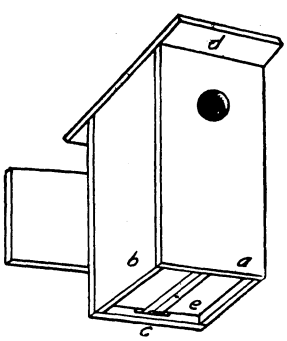


FIG. 18.—Lumber diagrams of house shown in figure 17. Thickness of boards ¾ inch.



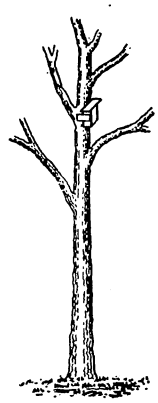


FIG. 19.—Style of house suitable for sparrow hawks, screech owls, bluebirds, and wrens. Designed to be placed in trees. Bottom can be removed by turning button.

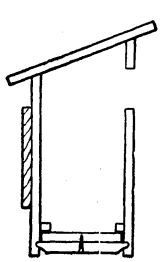


FIG. 20.—Section of house shown in figure 19.

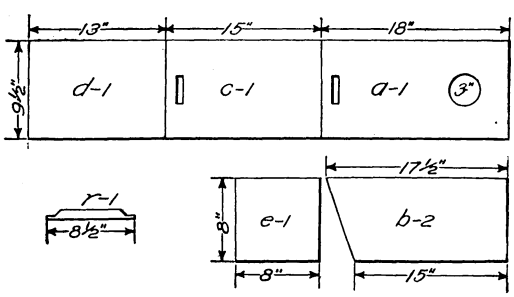


FIG. 21.—Diagrams of house shown in figure 19 for sparrow hawks and screech owls. Thickness of boards ¾ inch.

opened for cleaning by turning a button and removing the bottom. This house is easy to build and if suitably proportioned is adapted to a great variety of birds. Plans are furnished for two sizes—one for bluebirds and the other for screech owls or sparrow hawks.

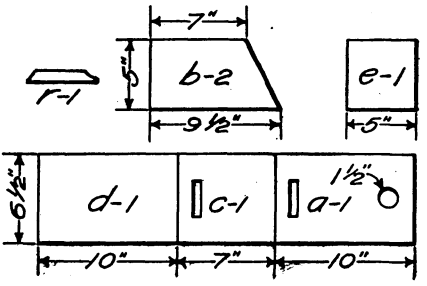


FIG. 22.—Diagrams of house shown in figure 19 for bluebirds. Thickness of boards ¾ inch.

The flicker house shown in figure 23 is designed to be placed on a post or the stub of a tree. The roof can be lifted in the same way that a stopper is removed from a bottle. A house suitable for members of the woodpecker family and also for nuthatches and titmice, including chickadees, is shown in figure 25. It is attached to boles of trees. The bottom is removable, as appears in figure 26.

Figure 29 shows a house designed for wrens and house finches. For wrens it may be placed on a tree or fence post. If attached near the eaves of a building, house finches or wrens will use it. The front gable is open, entrance to the room below being through the rear of the upper floor. This house can be opened for cleaning by lifting out the upper floor.

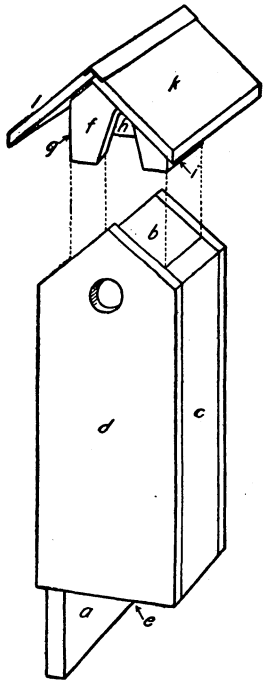
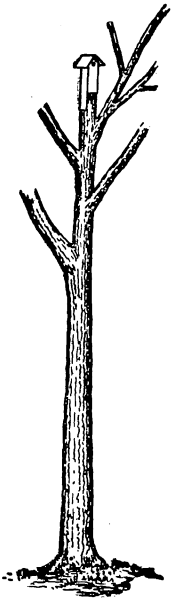


FIG. 23.—Flicker house to be mounted on post or stub of tree.



Martin houses are built on the apartment plan to satisfy the social instinct so marked in martins but so conspicuously lacking in most other birds. They usually contain not less than 10 or 12 rooms and for this reason are relatively complicated, especially if they are miniatures of elaborate buildings, as is often the case. Like the single room houses, they should be easy to inspect and clean from top to bottom and, if possible, should be made proof against the English sparrow. An attempt to combine these essentials in a plain house is illustrated in figure 32. The body of this house slides upon its pole, to the top of which the roof is solidly attached (fig. 36). The pole is hollow and

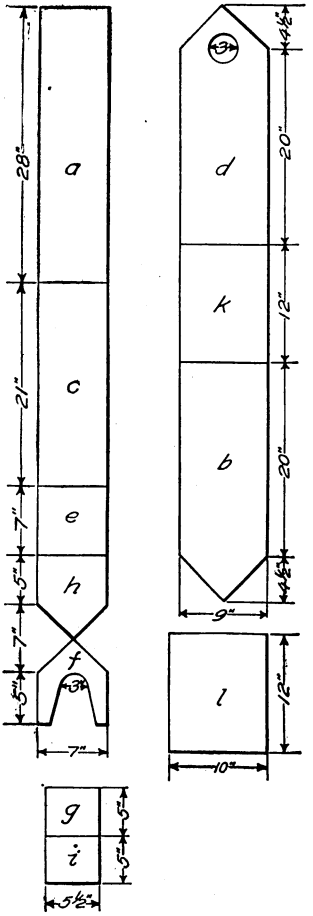


FIG. 24.—Lumber diagrams for flicker house shown in figure 23. Thickness of boards ¾ inch.

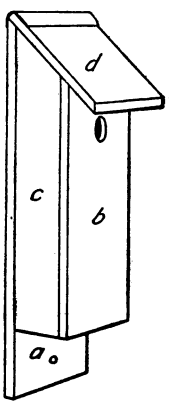
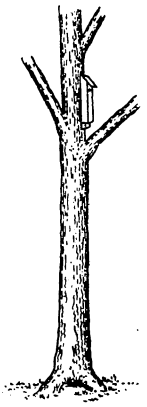


FIG. 25.—House to be placed in tree for woodpeckers, chickadees, nuthatches, or titmice.



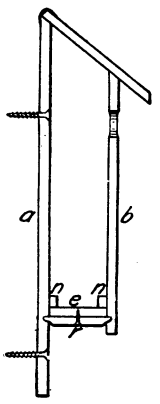


FIG. 26.—Section of house shown in figure 25.

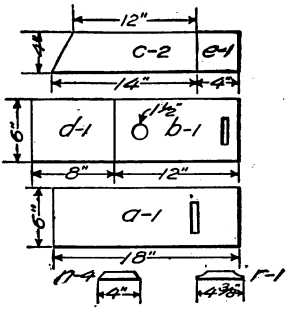


FIG. 27.—Lumber diagrams of house shown in figure 25, suitable for downy woodpecker. By reducing size of entrance it becomes right for titmice and nuthatches. Thickness of boards ¾ inch.

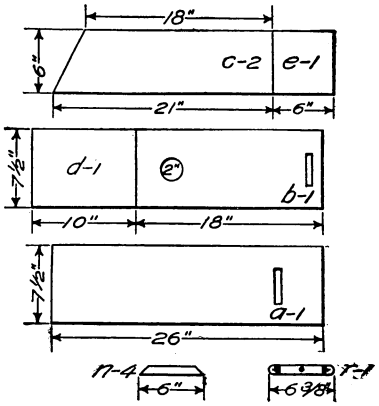


FIG. 28.—Lumber diagrams of house shown in figure 25, suitable for red-headed woodpecker. Thickness of boards ¾ inch.

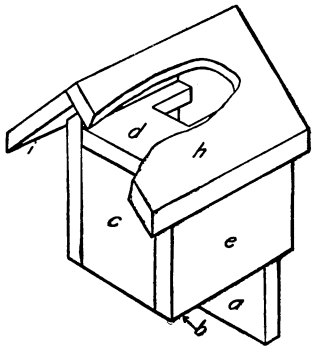


FIG. 29.—House for wrens and house finches. Roof broken to show interior.

through it runs a cord by which the house is raised and lowered. The floors are all removable by lifting up. When the house is out of contact with the roof all of the entrances are closed by gates actuated by springs, the gates moving upward to close, and being kept down and open by pressure against the roof. By means of this device sparrows may be kept out of the house until martins are due to arrive, or if they get in when the house is open they can be trapped by suddenly lowering it. The pole shown here is made from hardwood boards put together with screws. The concrete base has a core of 2-inch iron pipe which extends upward far enough to make a firm connection with the upper part on which the house slides. A heavy weight is employed to hold the house hard against the roof. By passing the cord around the hook of the weight exactly as shown in figure 39 and pulling it upward until the weight is clear of the ground, it can easily be held without slipping while a more secure knot can be tied. A hook less wearing to the cord and fully as serviceable may be made from an acute natural crotch of oak or other

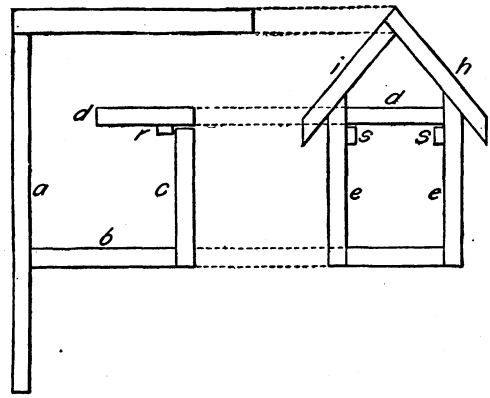


FIG. 30.—Sections of house shown in figure 29. Upper floor removable.

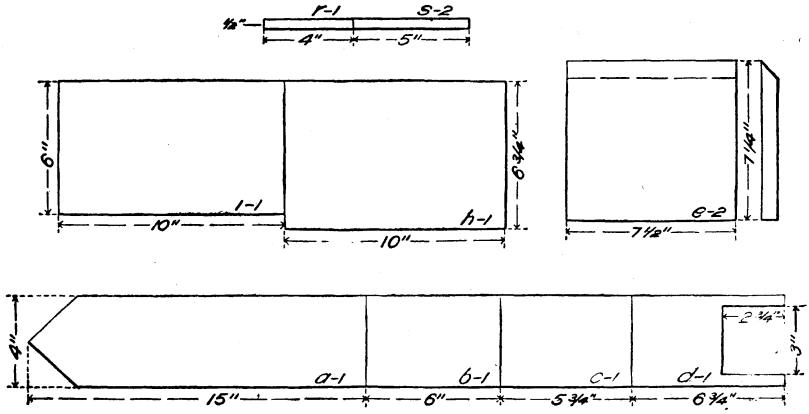


FIG. 31.—Lumber diagrams for house shown in figure 29. Thickness of boards ¾ inch.

hardwood instead of iron. Where this house is exposed to strong winds it may be advisable to attach guy wires to corners of the roof. The pole may be made of a single piece of 4-inch galvanized pipe, set in a concrete base. In this case the house should be a cylinder and the roof a cone.

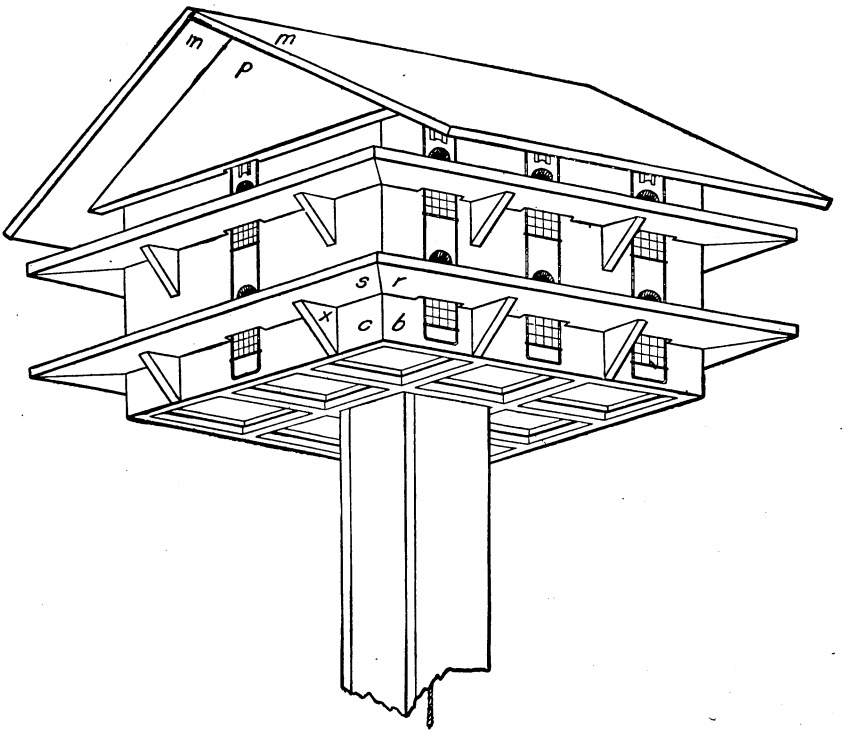


FIG. 32.—Martin house.

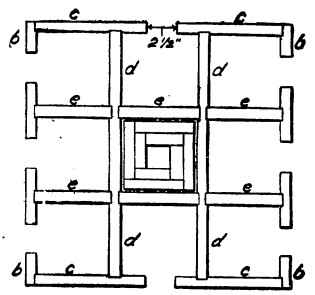


FIG. 33.—Horizontal section of martin house.

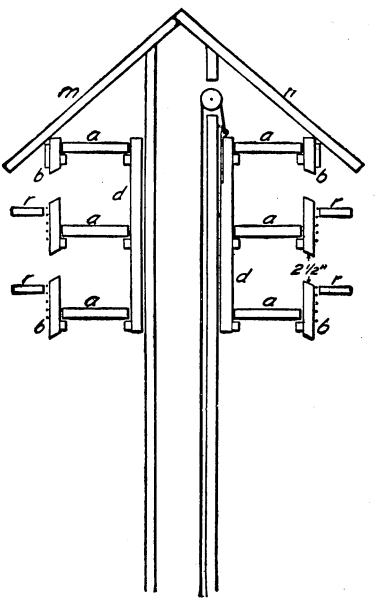


FIG. 34.—Cross vertical section of martin house; raised, and doors open.

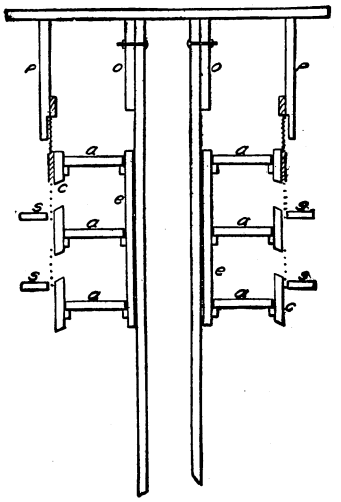


FIG. 35.—Longitudinal vertical section of martin house; lowered, and doors closed.

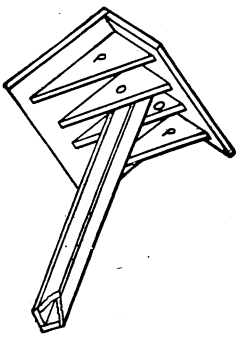


FIG. 36.—Roof of martin house attached solidly to pole.

FIG. 39.—Proper way to make first "hitch" of rope on hook of counterweight.

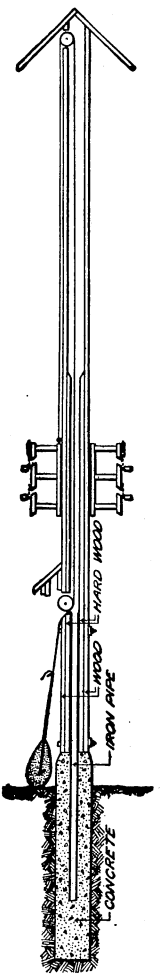


FIG. 37.—Martin house lowered; doors closed.

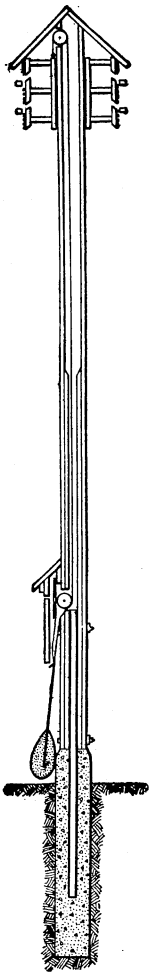


FIG. 38.—Martin house in place; doors open.

That martins may be attracted to a less elaborate house is well shown in the illustration on the title-page. This is one of several colonies of purple martins on the estate of Mr. Gilbert H. Grosvenor, at Wild Acres, Md. Incidentally, efforts to attract birds on this estate have been so rewarded that in 1915, in addition to a flourishing colony of 70 pairs of purple martins, there were nesting on 5 acres 65 pairs of birds of 23 other species—the 1915 record for density of bird population.[1]

[1] Second Annual Report of Bird Counts in the United States, with Discussion of Results, by Wells W. Cooke. U. S. Dept. Agr. Bull. 396, p. 19, October 23, 1916.

CARE OF HOUSES.

Each spring before birds return from the South all filth and litter should be carefully removed from bird houses. In addition to the relics of previous occupancy, houses are likely to contain cocoons of insects, and nests of bees or squirrels. Attention to this one item of spring cleaning is a substantial factor in attaching birds permanently to their houses. A little sulphur scattered about a house is a good

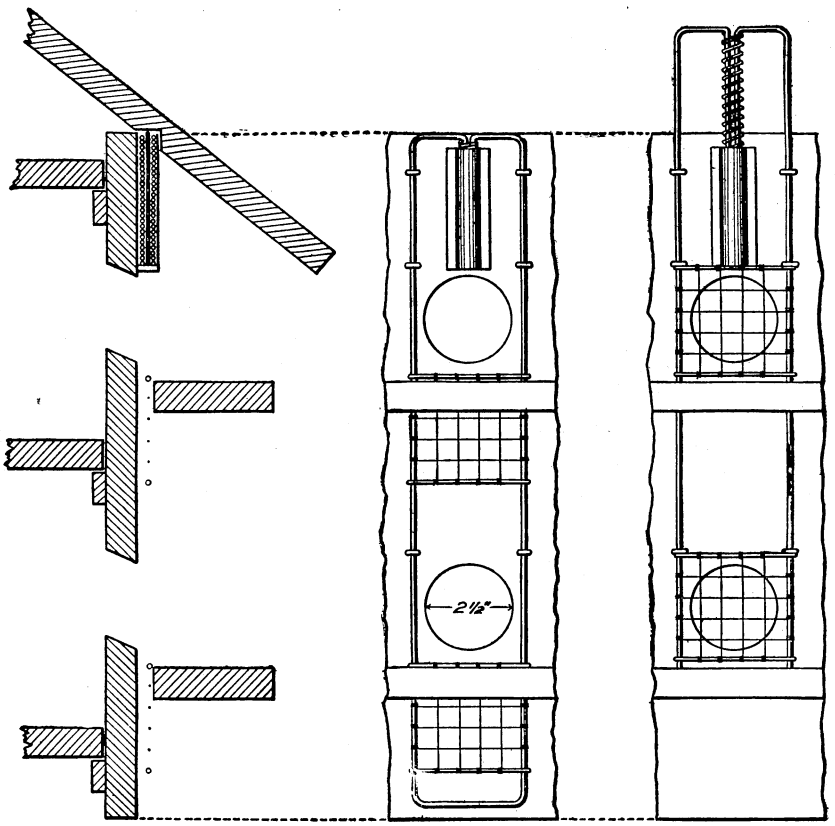


FIG. 40.—Details of construction and operation of gates.

remedy for parasites. When bluebirds or swallows take possession of a martin house it is a good plan to put up a one-room house in the vicinity and remove the nest from the martin house. Interlopers, thus evicted, often transfer their housekeeping to the small house. Houses designed for woodpeckers should always have an inch or so of sawdust in the bottom for the reception of eggs, as woodpeckers do not gather nest materials. Due attention should be given to repairs. It is easier to keep houses in good order than to build new ones.

ENEMIES OF HOUSE BIRDS.

Birds have numerous enemies from which a careful landlord will try to guard them. Among these is the English sparrow, whose persistent attacks too often drive more desirable birds away from their nests and from the neighborhood. Those who wish to free their premises of these sparrows will find recommendations in Farmers' Bulletin 493, The English Sparrow as a Pest. European starlings often occupy boxes erected for our native species, but it is to be

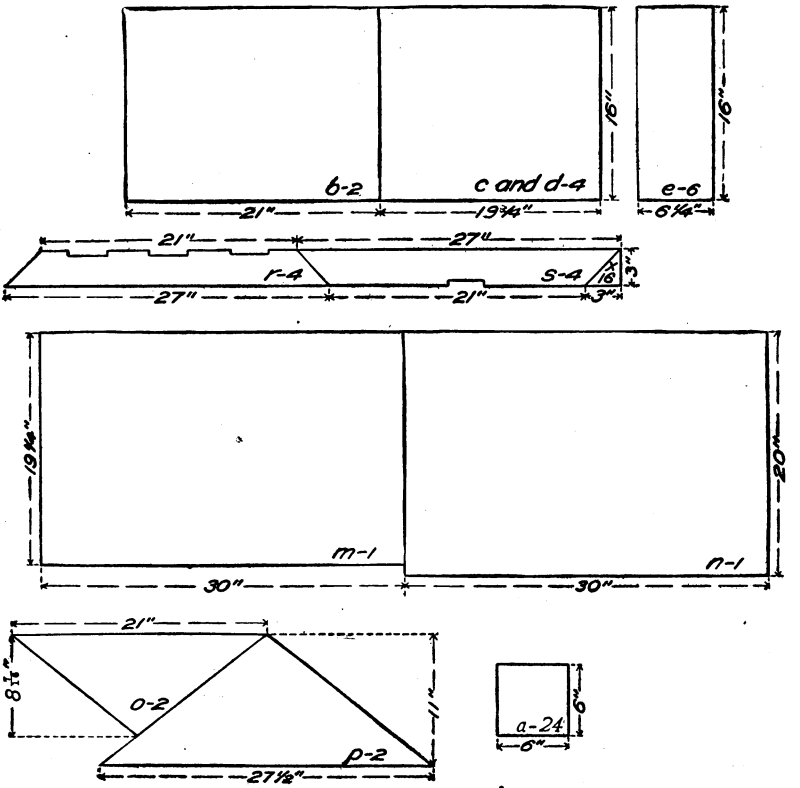


FIG. 41.—Lumber diagrams for martin house shown in figure 32. Thickness of boards ⅞ inch.

remembered that these introduced birds have themselves been found to be persistent enemies of many important insect pests.

Cats and large snakes are enemies of birds, the former perhaps killing more birds than any other mammal. Trees and poles supporting houses should be sheathed with tin or galvanized iron to prevent these enemies from climbing to the nests. Squirrels give more or less trouble by gnawing houses, eating eggs, and killing nestlings. Red squirrels, in particular, have a very bad reputation in this respect, and many experimenters keep their grounds free from them. Some regard flying squirrels as but little better than red ones. Even gray

and fox squirrels are occasionally troublesome. It is not necessary, however, that bird lovers should wage indiscriminate warfare against all squirrels. It is far better to adopt the rule never to kill a squirrel unless there is reason to believe that it has acquired the habit of eating eggs or young birds; the result will probably be that not more than one red squirrel in fifty nor more than one gray squirrel in a hundred will have to be killed. Where squirrels are numerous they give more or less trouble by gnawing and disfiguring houses. This damage may be prevented, however, by covering the parts about the entrance with tin or zinc.

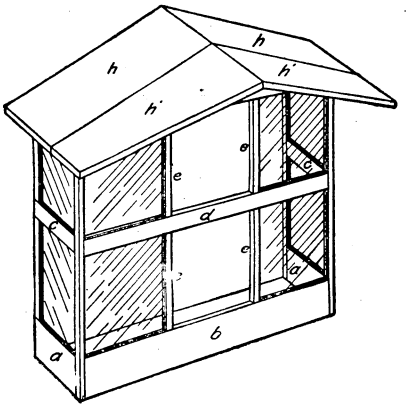
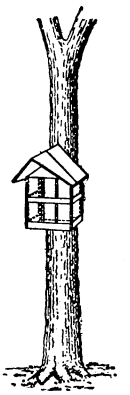


FIG. 42.—Food shelter for attachment to trunk of tree.



FOOD SHELTERS.

Another means of attracting birds about human habitations is to furnish an abundance of food, preferably in food shelters. If one is unable to make shelters that will protect food in all kinds of weather, the food may be fastened to trunks or branches of trees or scattered in sheltered places on the ground. A decided advantage in having shelters, aside from that of protecting food, is that they may be placed where the birds can be watched conveniently. When shelters are used the birds are first baited by placing food, such as suet, seeds, or cracked nuts, in a conspicuous place, and then led by degrees to enter the inclosure. Designs for two food shelters are exhibited in figures 42 and 46, one of which is supported by a post, the other by a tree. Structural details are shown for both. There is no bottom to either of them.

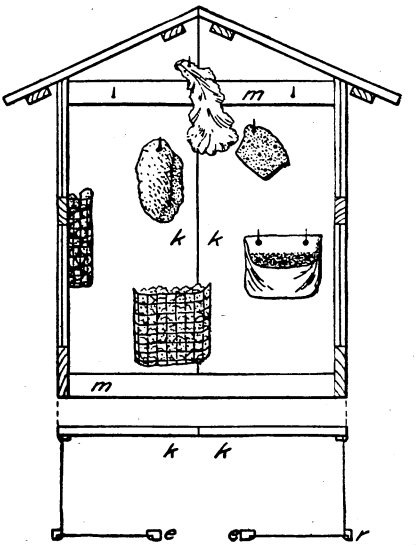


FIG. 43.—Vertical section, side to side, with suggestions for larder; diagrammatic and cross section of food shelter shown in figure 42.

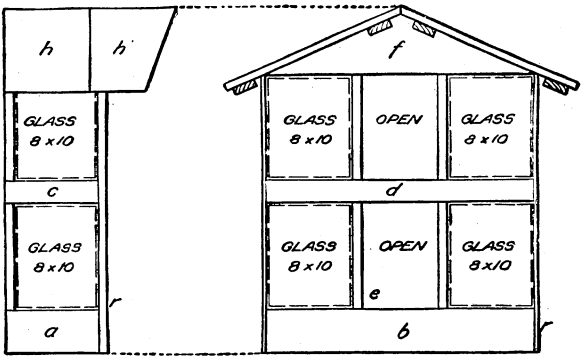


FIG. 44.—Front and side elevations of shelter shown in figure 42.

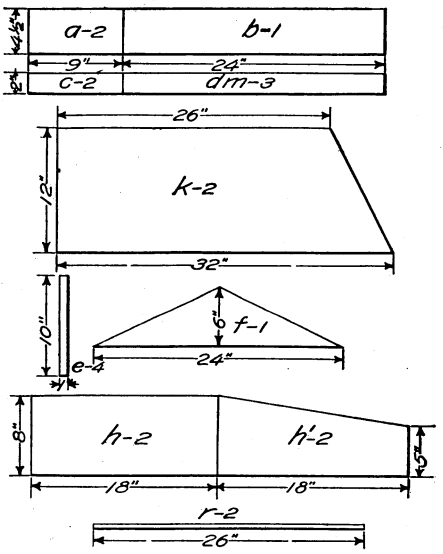


FIG. 45.—Lumber diagram of food shelter shown in figures 42, 43, and 44.

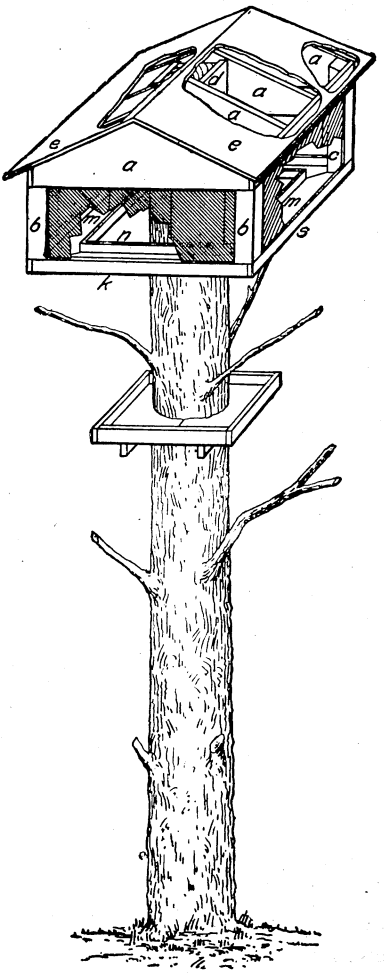


FIG. 46.—Food shelter for attachment to post. Roof cut away to show construction. Sides made of glass; size of panes 8 by 10 inches.

LOCATION.

The location of a bird house or food shelter has much to do with its success, for the reason that birds have decided notions as to proper surroundings for a dwelling. Martins prefer to breed near houses, but not within 20 feet of trees or buildings. Bluebirds are inclined to select orchards or pastures having scattered trees. Wrens, thrashers, and catbirds live in thick shrubbery. Robins like trees with sturdy trunks and branches. Titmice, nuthatches, and most of the woodpeckers are woodland species, although flickers and red-headed woodpeckers are more at home among the scattered trees of roadsides and pastures. Song sparrows frequent weedy swales and brush fences. Swallows do not enter woods so that a house would be as attractive to them in one open place as in another. The eastern phœbe, the black phœbe, and the house finch, while not limited to the haunts of man, are noticeably partial to them. Crested flycatchers, screech owls, barn owls, and sparrow hawks are governed more by convenience than by taste; although normally inclined to hold aloof from

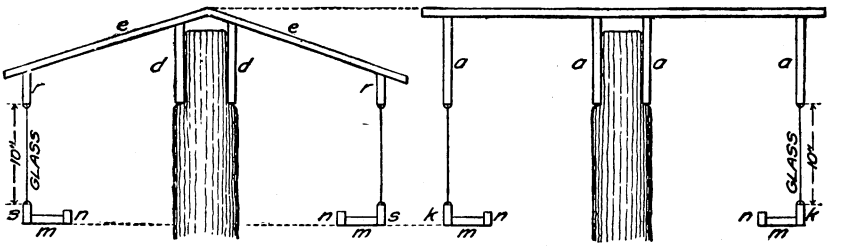


FIG. 47.—Cross and longitudinal sections of food house shown in figure 46.

man, they have in many instances reared their broods in close proximity to dwellings. Barn owls, true to their name, accept suitable quarters in buildings without hesitation.

CONCLUSION.

Before erecting bird houses one should first determine the kind of birds to which his premises are adapted. The question usually next arising is as to the number of birds that can be accommodated. Unless grounds are large, it is generally useless to expect as tenants more than a pair of each species, except martins. However, the singular intolerance shown by most birds during the breeding season to others of their kind does not operate between those of different species. A dozen different kinds of birds will pursue their several modes of hunting and raise their families on the same lot, but rarely two of the same sort.[1] Of all our house birds, martins alone are

[1] The fact that birds are more tolerant toward strangers than toward relatives was well illustrated by an observation made recently by the writer in New Mexico. A one-story tool house 10 feet square had nailed to three corners of its roof rough bird houses made from packing boxes. One was occupied by violet-green swallows, another by western bluebirds, and the third by English sparrows. A still more remarkable association of different species has been reported by Otto Widmann, of St. Louis, Mo., who once had in one house a pair each of flickers, martins, house wrens, and English sparrows nesting simultaneously.

social. The fact that there is a limit to the possible bird population on any given tract must be taken into consideration. When the probable tenants have been decided upon, the selection of sites is in order, for the site often decides the style of house that is to occupy it. In the final placing of bird houses, care should be taken to have them

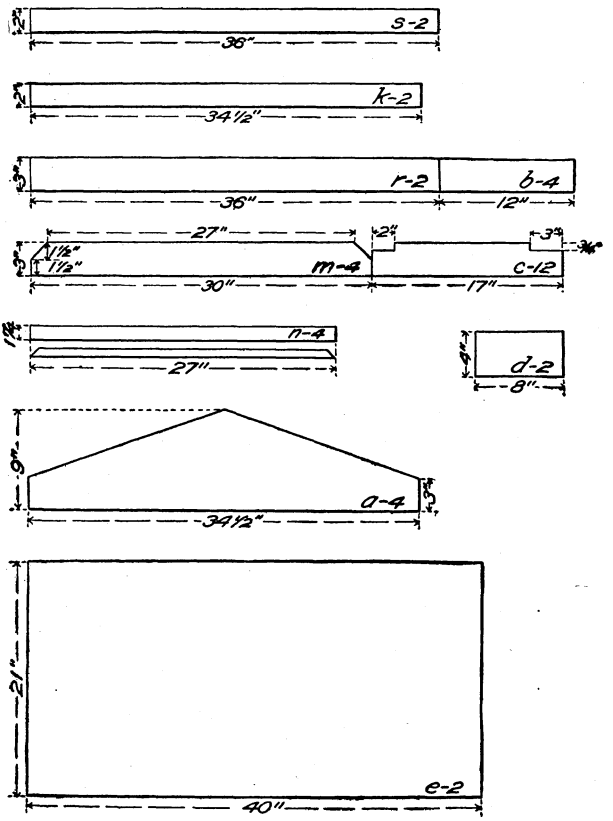


FIG. 48.—Lumber diagrams of food shelter shown in figure 46.

face away from the winds prevailing in stormy weather. The strongly developed homing instincts of birds can be relied on to attach them to the neighborhood where they first saw the light, and the identical pairs which nest in the houses provided for them one year will often return the next season to enjoy the same bounty and protection.

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Game Laws. (Annual publication, that for the season 1923–24, Farmers' Bulletin 1375.)
Directory of Officials and Organizations Concerned with the Protection of Birds and Game. (Annual publication, that for 1923, Department Circular 298.)
The Great Plains Waterfowl Breeding Grounds and Their Protection. (Separate 723, Yearbook 1917.)
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May 28, 1924.

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